IN THE CLAIMS:

1. (currently amended) A method of performing density gradient separations comprising the steps of:

at least partly forming and immobilizing at least one part of a density gradient solution, wherein the density gradient solution may be subjected to conditions that under some circumstances would degrade the density gradient solution if it were not immobilized; and

re-mobilizing the density gradient solution just before using the density gradient solution for a separation process; and

utilizing the density gradient solution in a separation of process.

2. (currently amended) A method in accordance with claim 1 in which the step of at least partly forming the density gradient solution includes the step of forming layers of different density fluids and immobilizing the layers of different ~~densities~~ density fluids.

3. (currently amended) A method in accordance with claim 2 in which the step of forming layers of different densities includes the step of mixing fluids of different densities in a series of different proportions to form a series of different density layers.

4. (currently amended) A method in accordance with claim 3 in which the different density fluids are brought close to the freezing point and layered into a container sufficiently cold ~~so as~~ to immobilize the layers as they are inserted into the container.

5. (original) A method in accordance with claim 1 in which the step of at least partly forming at least one part of a density gradient solution includes the step of forming a density gradient solution with a density gradient former and freezing the density gradient solution before defusion degrades it.

6. (original) A method in accordance with claim 1 wherein the step of at least partly forming and immobilizing at least one part of a density gradient solution includes the step of freezing at least portions of different density material; said method further including the steps of :

packaging the different density portions; and

shipping packages of different density portions to other locations for assembly into density gradient solution tubes.

7. (original) A method of forming a density gradient solution comprising the steps of:

gathering immobilized fluid units of different densities having a size appropriate for inserting in a density gradient tube;

inserting a highest density immobilized unit into the tube and following it with successively lower density units, wherein an immobilized density gradient solution tube is formed.

8. (original) A method in accordance with claim 7 further including the steps of:

re-mobilizing the units in the density gradient tube; and

permitting the re-mobilized units to defuse together after re-mobilization to form said density gradient solution.

9. (original) A method in accordance with claim 8 in which the step of re-mobilizing a unit comprises the step of freezing a unit.

10. (original) A method of forming a density gradient solution comprising the steps of:

drawing fluid from a high density fluid source;

drawing a second fluid from a lower density fluid source;

mixing the fluids and layering them into a liquid density gradient tube;

repeating the process while changing from a large amount of the highest density fluid to lower and lower proportions whereby layers of different proportions of fluid are applied to the liquid density gradient tube; and

immobilizing the fluids in the density gradient tube before the layers diffuse together.

11. (original) A method in accordance with claim 10 in which the step of immobilizing the fluids comprises the step of freezing the fluids.

12. (original) A method in accordance with claim 10 in which each of the layers are precooled and applied under circumstances that cause immobilization.

13. (canceled).

14. (currently amended) A gradient former comprising:

a first pump;

a second pump;

a first source of fluid having a predetermined density;

a second source of fluid having a second predetermined density;

a mixer;

said first pump communicating with said first source of fluid to pump fluid into said mixer;

said second pump communicating with said second source of fluid to pump a second fluid into said mixer;

a control unit for controller;

said pumps ~~to mix~~ including means for mixing fluids at a series of predetermined densities for application to a density gradient tube; and

means for immobilizing the fluids in said density gradient tube.

15. (original) A gradient former in accordance with claim 14 further including a means for mixing said different layers in said density gradient tubes so as to form a continuous gradient in said tube.

16. (original) A gradient former in accordance with claim 14 in which the means for immobilizing includes a means for freezing.

17-20. (canceled).

21. (new) Apparatus for performing density gradient separations comprising a gradient former, a central station, an apparatus for storing gradient tubes with immobilized density gradients in them, means for immobilizing gradients formed by said gradient former in gradient tubes; said gradient former and means for immobilizing gradients formed by said gradient former in gradient tubes being located in the central station; a plurality of remote stations; each of said remote stations including at least one means for storing said gradient tubes and means for re-mobilizing said density gradient solution prior to performing density gradient separations and means for performing density gradient separations.

22. (new) The combination of a shipping container and at least one immobilized solution, said immobilized solution being at least part of a gradient density tube.

23. (new) The combination of claim 22 in which the at least one immobilized solution is frozen.

24. (new) The combination of claim 22 in which the at least one immobilized solution is a sucrose solution.

25. (new) The combination of claim 22 in which the at least one immobilized solution is a plurality of frozen sucrose solutions.

26. (new) The combination of claim 22 in which the at least one immobilized solution is a plurality of immobilized solutions, each of said plurality of immobilized solutions being at least part of a corresponding one of a plurality of gradient density tubes within said shipping container.